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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/699,873	10/30/2000	Matthew W. Losey	00816	7055

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EXAMINER

ELVE, MARIA ALEXANDRA

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 06/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/699,873	<b>Applicant(s)</b> LOSEY ET AL.	
	<b>Examiner</b> M. Alexandra Elve	<b>Art Unit</b> 1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14,35 and 36 is/are allowed.
- 6) ☒ Claim(s) 15-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/12/01</u> . | 6) <input type="checkbox"/> Other: ____.  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

Claims 17-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Dependent claims are dependent upon themselves and hence the claims cannot be further examined on the merits.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 15-16, 25-30 & 33-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Ashmead et al. (US Pat. 5,534,328).

Ashmead et al. discloses an integrated structure for chemical processing having has a plurality of laminae, which are connected to each other and to an inlet and outlet port(s). Figure 7 exhibits laminae, an array of mixing elements and a distribution manifold. Figure 16 shows a catalytic reactor whereby catalyst beads are contained within the channels. Additionally, a control unit is connected to temperature sensors. (abstract, figures, col. 2, lines 3-17, col. 5, lines 1-5, col. 7, lines 28-47, col. 13, lines 10-22)

Claims 16 & 33-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Northrup et al. (US Pat. 6,521,181).

Northrup et al. discloses a microfabricated chemical reaction cell, which has lamina and fluid inlet and outlet port(s). The surface tension across the channels alters the flow of reactants. The holder has a thermocouple based temperature feedback control which can measure and control temperature. (abstract, figures, col. 5-6, col. 8-9)

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ashmead et al. as stated above and further in view of Bergh et al. (US Pat. 6,749,814).

Ashmead et al. discloses a microreactor with laminae but does not discuss mass transfer. Bergh et al. teaches a chemical microsystem which has a plurality of lamina and catalyst (abstract, col. 23). Mass transfer is an aspect of the reactor as is known for thermal and chemical processes a small size yields a desirable high mass transfer rates and hence a rapid chemical reaction. It would have been obvious to one of ordinary skill in the art at the time of the invention to consider mass transfer, as taught by Bergh et al. in the Ashmead et al. system because expedient reaction rates are desirable. It is well

settled that where patentability is predicated upon a change in a condition of the prior art process, such as mass transfer coefficient, the change must be at least critical, that is, it must lead to a new and unexpected result. The applicant has the burden of providing such proof of criticality. Note *In re Aller* et al. 105 USPQ 223.

Claims 15 & 25-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Northrup et al. as stated above and further in view of Ashmead et al.

Northrup et al. discloses a microreactor system but does not teach the use of manifold or catalyst. Ashmead et al. discloses an integrated structure for chemical processing having has a plurality of laminae, which are connected to each other and to an inlet and outlet port(s). Figure 7 exhibits laminae, an array of mixing elements and a distribution manifold. Figure 16 shows a catalytic reactor whereby catalyst beads are contained within the channels. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a manifold or catalyst, as taught by Ashmead et al. in the Northrup et al. system because these elements enhance chemical reactivity and hence shown the reaction time.

Claims 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Northrup et al. as stated above and further in view of Bergh et al.

Northrup et al. discloses a microreactor system but does not discuss mass transfer. Bergh et al. teaches a chemical microsystem which has a plurality of lamina and catalyst (abstract, col. 23). Mass transfer is an aspect of the reactor as is known for

thermal and chemical processes a small size yields a desirable high mass transfer rates and hence a rapid chemical reaction. It would have been obvious to one of ordinary skill in the art at the time of the invention to consider mass transfer, as taught by Bergh et al. in the Northrup et al. system because expedient reaction rates are desirable. It is well settled that where patentability is predicated upon a change in a condition of the prior art process, such as mass transfer coefficient, the change must be at least critical, that is, it must lead to a new and unexpected result. The applicant has the burden of providing such proof of criticality. Note *In re Aller* et al. 105 USPQ 223.

#### ***Allowable Subject Matter***

Claims 1-14 & 35-36 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not teach a microfabricated chemical reactor with a particle filter or an accessory channel.

#### ***Conclusion***


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See US PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Alexandra Elve whose telephone number is 571-272-1173. The examiner can normally be reached on 6:30-3:00 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on 571-272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

June 21, 2004.

  
M. ALEXANDRA ELVE  
PRIMARY EXAMINER